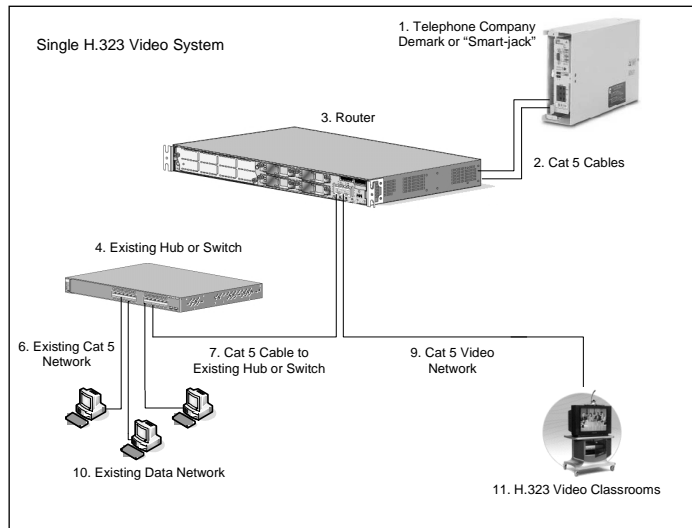


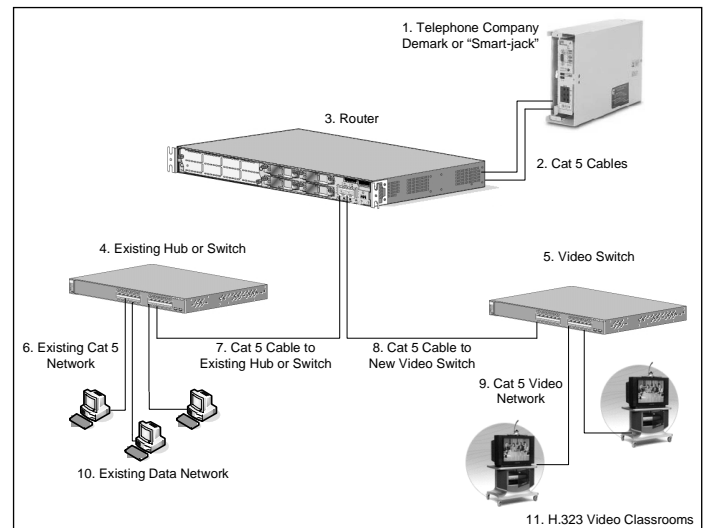
Video and Data Network Segmentation

Explanations and Guidelines

July 22, 2005



Single System Configuration



Multiple System Configuration

Educational users of interactive video are being asked to segment their data traffic and their video traffic across their local area and wide area networks in order to maintain Quality of Service (QoS) and to mitigate encumbrance of firewalls (video requires dynamic port allocation). This whitepaper provides the recommended configuration of a typical layout for a local K12 video and data network. While each location will be unique, the following principles should allow users of the network to design their facilities so that our goals of a reliable, secure, on-demand system can be realized.

1. The telephone companies demark or smartjack is where the two T1s connecting the campus with the Wide Area Network will be terminated.
2. Two Cat 5 cables will be needed to connect the smartjacks to the router's ATM ports. If the smartjacks will be more than 8 feet from the router then we must ensure that the phone company extends the demark to the router's permanent location.
3. The router is the device that will converge the video and data traffic onto one network. It will ensure that each segment receives the Wide Area Network resources as allocated.
4. The school or office should not have to change any part of their existing Local Area Network. Once the new router is operational you will be able to use a Cat 5 Cable to connect the router to the existing hub or switch exactly as your current router is connected.
5. The video LAN and switch will be new pieces of equipment that each site with multiple H.323 video classrooms will need to provide. If a site only has one video classroom then the video switch will not be necessary. If your school will have only one operational H.323 video system the Video Ethernet port can be connected directly to your system CODEC via a crossover cable. Sites with multiple systems will need to provide the video switch. The minimum requirements for the switch are: VLAN enabled and class based weighted fair queuing QoS enabled. The recommended switch is a Cisco 2950-12.
6. The campus will continue to use its existing data network. There should not be any changes required.
7. The Cat 5 cable connecting the campus router to its existing hub or switch cannot exceed 328 feet in overall length.
8. The Cat 5 cable connecting the campus router to the video switch or CODEC cannot exceed 328 feet in overall length. If the video switch needs to be further than 328 feet from the router then fiber optic cabling can be used with transceivers or media converters to extend the distance. Existing unused fiber optic filaments installed by APSCN can be used for this purpose. If termination of unused filaments is required this work will be done at the school's expense.